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This grant is a DURIP instrumentation grant. The focus of the grant was to purchase a high-end graphics workstation for statistical data analysis. Our concepts was for the development of a tool that we called data set mapping. This tool will prove beneficial in data sets that are difficult to visualize due to mulit-dimensionality. The basic idea is to interface the high and workstation with a high performance minisupercomputer, in our case the Intel iPSC/2 d4/VX, so that processors of the hypercube are tied to graphics windows. The windows are virtual pieces of paper with dynamical graphics in each. This tool is highly interactive. It is assumed that this workstation is on an ethernet with a parallel processor, such that the parallel processor is capable of providing an engine for intense numerical calculations.

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Masood Bolorforoush and Edward J. Wegman, "On some graphical representations of multivariate data," in *Computing Science and Statistics: Proceedings of the 20th Symposium on the Interface,* (Wegman, Gantz and Miller, eds.) 121-126, (1989)

Carlos Gonzalez, J. Chen and J. Sarma, "A tool to generate Fortran parallel code for the Intel iPSC/2 Hypercube," in *Computing Science and Statistics: Proceedings of the 20th Symposium on the Interface,* (Wegman, Gantz and Miller, eds.) 214-219, (1989)

Edward J. Wegman, "Computational statistics: a new agenda for statistical theory and practice," *J. Wash. Acad. Sci, 78,* 310-322 (1988)

Edward J. Wegman, Invited discussion of "How to get your first research grant" by B. E. Trumbo, *Statistical Science, 4,* 121-150 (1989)

Edward J. Wegman, "Parallel coordinate densities," *Proceedings of the 34th Conference on the Design of Experiments in Army Research Development and Testing,* 247-264, (1989)

Edward J. Wegman, "Parallel computing and statistics," *Proceedings of the American Statistical Association Sesquicentennial Special Invited Paper Sessions,* 231-244, (1989)

Edward J. Wegman, "Hyperdimensional data analysis using parallel coordinates," to appear *Journal of the American Statistical Association* (1990)

Edward J. Wegman, "Statistics," To appear *McGraw-Hill Science Yearbook-1991* (Encyclopedia article) (1991)

Mingxian Xu, John J. Miller and Edward J. Wegman, "Parallelizing multiple linear regression for speed and redundancy: an empirical study," To appear *Journal of Statistical Computation and Simulation*; short version to appear *Computing Science and Statistics: Proceedings of the 21st Symposium on the Interface* (1990)

Edward J. Wegman, "Stochastic load balancing in coarse grain parallel computers," To appear *Robustness, Diagnostics, Computing and Graphics in Statistics*; short version to appear *Proceedings of the 4th Conference on Hypercube Concurrent Computers and Applications* (1990)

John J. Miller and Edward J. Wegman, "Construction of line densities for parallel coordinate plots," To appear *Robustness, Diagnostics, Computing and Graphics in Statistics*; short version to appear *Computing Science and Statistics: Proceedings of the 21st Symposium on the Interface* (1990)

R. Duane King and Edward J. Wegman, "A parallel implementation of data set mapping," To appear *Proceedings of the 4th Conference on Hypercube Concurrent Computers and Applications,* (1990)

Donald Gantz, Carlos Gonzalez, Jayanta Herath, Duane King and Masood Bolorforoush, "A tool to support software development in a hypercube environment," To appear *Proceedings of the 4th Conference on Hypercube Concurrent Computers and Applications,* (1990)

7. TECHNICAL SUMMARY

This grant is a DURIP instrumentation grant. The focus of the grant was to purchase a high-end graphics workstation for statistical data analysis. Our concept was for the development of a tool that we called data set mapping. This tool will prove beneficial in data sets that are difficult to visualize due to multi-dimensionality. The basic idea is to interface the high end workstation with a high performance minisupercomputer, in our case the Intel iPSC/2 d4/VX, so that processors on the hypercube are tied to graphics windows. The windows are virtual pieces of paper with dynamical graphics in each. This tool is highly interactive. It is assumed that this workstation is on an ethernet with a parallel processor, such that the parallel processor is capable of providing an engine for intense numerical calculations.

The original proposal planned for the acquisition of a Silicon Graphics IRIS 4D-80-GTXB. We considered also equipment by Digital, HP, SUN and Apollo. We were able to negotiate additional concessions from Silicon Graphics and also obtain some $10,000 cost sharing from the University rather than the originally planned $5000. We were able to purchase a Silicon Graphics IRIS 4D-120-GTX which is a considerably upgraded machine along with three years maintenance. We are very pleased with our acquisition which was installed on June 29, 1989.

Dr. Wegman gave one of the ASA Sesquicentennial Lectures at the 1989 Joint Statistical Meetings in Washington, D.C. in August, 1989. The topic was "Parallel Computing and Statistics." Dr. Wegman has become the new Theory and Methods Editor for the *Journal of the American Statistical Association.*

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